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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,669	09/18/2003	David J. Alcoe	END920010135US2	8575

7590 11/29/2004
Schmieser, Olsen & Watts
3 Lear Jet Lane, Suit 201
Latham, NY 12110

EXAMINER

LE, THAO X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,669

Applicant(s)

ALCOE ET AL.

Examiner

Thao X Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 depends on the canceled claim 1. Assuming claim 16 depends on claim 10 for the purpose of examination.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 10-12, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5880524 to Xie.

Regarding claim 10, Xie discloses a method in fig. 1A-5 for dissipating heat from an electronic package having one or more components comprising: providing a substrate 102, fig. 1A, column 2 line 47, having a first coefficient of thermal expansion; attaching a lid 104, column 2 line 56, to said substrate 102, said lid 104 including a vapor chamber 120, column 3 line 4, the

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lid 104 having a second coefficient of thermal expansion; matching said first coefficient of thermal expansion matched to said second coefficient of expansion; providing a thermal transfer medium 112, column 2 line 67, in contact with a back surface of each component 106, column 2 line 49, and an outer surface of a lower wall 132, column 2 line 61, of said lid 104; and electrically connecting each component to a top surface of said substrate 102, fig. 1A column 2 line 50.

Although the prior art does not specially disclose the limitations, i.e., 'coefficient of thermal expansion' and 'matching said first coefficient of thermal expansion (CET) matched to said second coefficient of expansion', this feature is seen to be inherently teaching of that limitations because each material would have possessed a CET, and that the matching CET would be the consequential results of the cooling action asserted by of the lid and the heat sink.

Regarding claim 11, Xie discloses the method of claim 10, wherein said lower wall 132 of said lid 104 has a third coefficient of thermal expansion and said components 106 have a fourth coefficient of expansion and further including matching said third coefficient of expansion to said fourth coefficient of expansion, see discussion in claim 10.

Regarding claim 12, Xie discloses the method of claim 10, further including: mounting a heat sink 140, column 3 line 35, having a fifth coefficient of thermal expansion to an outer surface 130, fig. 1A column 3 line 30, of a top wall of said lid, and matching said fifth coefficient of expansion to said second coefficient of expansion, see discussion in claim 10.

Regarding claim 14, Xie discloses the method of claim 10, further including providing supports 126, fig. 1A, within said vapor chamber 120 between an upper wall 122, fig 1A, of said

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vapor chamber 120 and said lower wall 132, some or all of said supports aligned over some or all of said components 106.

Regarding claim 15, Xie discloses the method of claim 10, wherein said package is selected from the group consisting of ball grid array modules, pin grid array modules, land grid array modules and HyterBGA modules, column 2 line 40.

Regarding claim 16, Xie discloses the method of claim 10, wherein said lid 104 is formed from material selected from the group consisting of aluminum, copper, Invar, gold, silver, nickel, aluminum-silicon carbide, plastics, ceramics and composites, column 3 line 49.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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5. Claims 13, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5880524 to Xie in view of US 6212074 to Gonsalves.

Regarding claims 13, 17, Xie does not disclose the method of claim 10, wherein said lower wall of said lid has protruding regions for maintaining equivalent contact with said thermal transfer medium on thin components of said components as is maintained by thin regions on thick components of said components, and wherein said substrate includes material selected from the group consisting of ceramics, fiberglass, polytetrafluoroethylene, and polymers.

But Gonsalves discloses the method in fig. 1 wherein said lower wall 40 of said lid 30 has protruding regions (portion in contact with 10-1 – 10-10-7) for maintaining equivalent contact with said thermal transfer medium on thin components 10-1 of said components as is maintained by thin regions on thick components 10-7 of said components, and wherein said substrate 80 includes material selected from the group consisting of ceramics, fiberglass, polytetrafluoroethylene, and polymers, column 6 lines 11. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the teaching of Gonsalves with Xie, because it would have created a thermal path sufficient to transfer heat from the multilevel surface to the heat sink, as taught by Gonsalves, see abstract.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thao X. Le
19 Nov. 2004



LONG PHAM
PRIMARY EXAMINER